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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/747,634	12/21/2000	Stuart K. Card	D/A0A30	4531

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EXAMINER	
BASOM, BLAINE T	
ART UNIT	**PAPER NUMBER**
2173	

DATE MAILED: 12/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Applicati n No.	Applicant(s)	
	09/747,634	CARD ET AL.	
	Examiner	Art Unit	
	Blaine Basom	2173	

-- Th MAILING DATE of this communication appears on the cover sh t with the correspondenc address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 July 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-31* is/are pending in the application.

4a) Of the above claim(s) *21-24 and 28-30* is/are withdrawn from consideration.

5)☒ Claim(s) *3,4 and 25-27* is/are allowed.

6)☒ Claim(s) *1,2,5-20 and 31* is/are rejected.

7)☒ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *07 May 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

The Examiner acknowledges the Applicants' amendments to the claims of the present application. Particularly regarding claims 1, 2, 5-16, and 31, the Applicants allege that neither Herman ("Latour – A Tree Visualization System," by Herman et al.), Martino (U.S. Patent 6,486,898 to Martino et al.), Turo ("Improving the Visualization of Hierarchies with Treemaps: Design Issues and Experimentations," by Turo et al.), Robertson ("Cone Tress: Animated 3D Visualizations of Hierarchical Information," by Robertson et al.), the U.S. Patent of Robertson (U.S. Patent No. 5,786,520), nor Lewis (U.S. Patent No. 5,987,469 to Lewis et al.) teach generating a degree of interest value relative to a sibling order distance from a focus node, as is now expressed by each of these claims. In response, the Examiner presents the document of Sarkar ("Graphical Fisheye Views of Graphs," by Sarkar et al.), which as shown below, explicitly teaches generating a degree of interest value relative to a sibling order distance from a focus node. The Applicant's arguments with respect to claims 1, 2, 5-16, and 31 have thus been considered, but are moot in view of the following new grounds of rejection.

Election/Restrictions

Claims 21-24 and 28-30 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 7/2/2004.

Claim Rejections - 35 USC § 102

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 5, 10, 13-20, and 31 are rejected under 35 U.S.C. 102(b) as being anticipated by the teachings of Sarkar et al. (hereafter referred to as "Sarkar"), as presented by the document entitled "Graphical Fisheye Views of Graphs." In general, Sarkar describes a technique for effectively browsing a graph displayed on a computer (see the "Introduction" section, on page 83). Such a graph may comprise a plurality of nodes, i.e. vertices, and links, i.e. edges between nodes (see the "Terminology" section, beginning on page 83). Additionally, these graphs may be hierarchically structured, particularly with the nodes and links hierarchically organized into a tree-like structure (for example, see the section entitled "Generalized Fisheye Views and Related Work," beginning on page 88, and also figures 9-11 on page 89). Consequently, Sarkar is considered to teach a method for displaying hierarchically linked information, the hierarchically linked information comprised of a plurality of nodes, each having one or more links to other nodes.

Specifically regarding claim 1, Sarkar teaches displaying a graph, whereby the user may select nodes of interest within the graph to magnify (see the section entitled "Generating Fisheye Views," on page 84). The user may thus dynamically select a focus node for any of the plurality of nodes in the graph. This may be done by, for example, performing a dragging operation with a computer mouse (see "The Prototype System" section on page 87). For each node in the graph, its size is calculated based on its distance to the user-selected focus node (see the section entitled "Generating Fisheye Views" on page 84). In hierarchically-structured graphs, the size of each sibling of the focus node is also indirectly based on the sibling order (see the section entitled

"Generalized Fisheye Views and Related Work" on pages 88-89, and particularly figure 10 on page 89). Sarkar is consequently considered to teach generating a degree of interest (DOI) value for each of the plurality of nodes in the graph, this value being relative to the focus node and sibling order distance from the focus node and corresponding to a node size. The nodes may be positioned, in a tree structure, based on their associated links and sized based on this degree of interest value (for example, see figure 10 on page 89). Sarkar further teaches identifying and performing any node compression necessary for boundedly displaying the graph (see the "Generating Fisheye Views" section on page 84), and displaying the graph based on the layout of the nodes and based on this node compression in a computer display (for example, see figure 10 on page 89).

As per claim 2, Sarkar discloses that the user may select multiple focus nodes (see the section entitled "Generalized Fisheye Views and Related Work" on pages 88 and 89). It is consequently understood that, like done for the first focus node, a second user-selected focus node may be detected, whereby in response, a second degree of interest value, relative to this second focus node, is generated for each of the plurality of nodes, and whereby the nodes may be positioned, in a tree structure, based on their associated links and sized based on this second degree of interest value. It is further understood that, as done for the first focus node, any node compression necessary is performed for boundedly displaying the graph of nodes, and whereby the graph is displayed based on the layout of the nodes and based on this node compression.

Concerning claim 5, Sarkar discloses that the above-described graph is entirely displayed within a display screen, and that the graph occupies the same amount of display space both before and after the user selects a focus node for enlargement (see the "Introduction" section on

page 83, and the "Generating Fisheye Views" section on page 84). It is consequently understood that when laying out these trees, there is some determination of whether the tree structure will fit into the display area, particularly whether it will fit vertically into the area, and if it does not fit into the display area, the node spacing and sizing is reduced proportionally until the structure fits into the area.

With respect to claim 10, Sarkar teaches that the above-described graphs may display a first set of data items associated with the nodes of the graph (for example, see the graph of figure 2 on page 85).

As per claims 13-15, it is understood that the above-described method for displaying a graph of links and nodes, as taught by Sarkar, is implemented with a computer (for example, see the section entitled "Response Time" on page 88). Such a computer is considered a system like that recited in claims 13-15. For example, this computer displays a tree, allows the user to select a node in the tree, and adjusts the size of the nodes in the tree in response to this selection, as is shown above. Consequently, it is understood that such a computer has a "display means," and "input device," and a "visualization processing element," like that expressed in claim 13. Similarly, since this computer generates a degree of interest for each node in the tree, lays out the plurality of nodes in the tree based on these values, and identifies and performs any necessary node compression, as is described above, it is understood that this computer comprises a "degree of interest calculation element," a "node layout element," and a "node compression element," like that recited in claim 14. Lastly, as this computer expands nodes that are closely related to the focus node, as is shown above, it is understood that this computer comprises a "node expansion element" as recited in claim 15.

Regarding claim 16, the above-described method of Sarkar for displaying a tree is implemented on a computer, as is shown above. Consequently, it is understood that such a method is realized with some sort of program storage device readable by the computer. Such a program storage device implementing the above-described method is considered equivalent to that recited in claim 16.

As per claims 17-20, Sarkar discloses that the size of the nodes of the above-described graph are based, in part, on the distance to the user-selected focus node (see the "Generating Fisheye Views" section on page 84), and particularly demonstrates that sizes of siblings of the focus node are based, in part, on their sibling order distance from the focus node (see figure 10 on page 89). Sarkar is thus considered to teach determining a degree of interest, which corresponds to node size, based on the distance to the focus node, and determining a fractional degree of interest adjustment for the degree of interest based on the sibling order distance from the focus node. As the size of each node may either be enlarged or decreased (see the "Generating Fisheye Views" section on page 84), it is understood that this fractional degree of interest adjustment may be reduced or increased. Also, since the actual numerical value of the degree of interest is arbitrary – only the relative values between nodes is important – it is understood that this fractional degree of interest adjustment may be less than one. As the degree of interest for a node is related to that of it's parent node, the degree of interest for child nodes of a sibling node are understood to be based on the degree of interest for the sibling node.

As per claim 31, Sarkar discloses that a user may select two focus nodes (see the section entitled, "Generalized Fisheye Views and Related Work," beginning on page 88). Herman is

thus considered to teach a method like that recited in claim 31, which involves the selection of two focus nodes.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over the teachings of Sarkar, which are described above, and also over U.S. Patent No. 5,786,820, which is attributed to Robertson. As shown above, Sarkar presents a method, like that of claim 1, which includes a step of identifying and performing any node compression necessary for displaying linked information within a display area. Sarkar, however, does not explicitly teach determining if the structure will fit horizontally into the display area, and causing the nodes at the edges of the display area to be overlapped, as is recited in claim 6.

Like Sarkar, Robertson discloses a method for presenting hierarchical information via trees. More specifically, and in regard to the claimed invention, Robertson discloses warping trees in order to display more information in a given display area. For example, figure 2 presents a given tree that is not warped. As shown in figure 2, nodes 204, 205, and 219 are not fully presented in the display area. Figure 3 shows the tree of figure 2 warped. As shown by figure 3,

all of the nodes are presented in the display area, and more particularly, the nodes are overlapped, including those at the edge of the display area.

It would have been obvious to one of ordinary skill in the art, having the teachings of Sarkar and Robertson before him at the time the invention was made, to modify the tree structure of Sarkar such that it is sized to fit within a single display area as is done by Robertson. In other words, it would have been obvious to modify the tree of Sarkar such that there exits a determination of whether the tree structure fits into the display area, and also, warping the tree by causing the nodes to be overlapped, as is done by Robertson. It would have been advantageous to one of ordinary skill to utilize such a combination because warping the tree structure allows more of the tree to be displayed within the display area, as is shown by Robertson (see column 4, line 49 – column 5, line 9). Consequently, this provides the user the ability to more efficiently view the overall organization of the hierarchically linked information displayed by the tree, as is demonstrated by Robertson.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over the teachings of Sarkar, which are described above, and also over U.S. Patent No. 5,504,853, which is attributed to Schuur et al. (and hereafter referred to as "Schuur"). As shown above, Sarkar presents a method, like that of claim 1, which includes a step of identifying and performing any node compression necessary for displaying linked information within a display area of a computer screen. Sarkar, however, does not explicitly teach determining if the structure will fit horizontally into the display area because certain levels are too wide, and causing the nodes at wide levels to be folded into multiple rows in the display area, as is recited in claim 7.

Like Sarkar, Schuur discloses a method for presenting hierarchical information via a tree of linked nodes (see column 2, lines 53-60). Regarding the claimed invention, Schuur discloses an "overview window," which displays this tree in a single display area (see column 9, lines 11-16). Reference number 100 in figure 11 shows such an overview window. As shown by this overview window, a tree is presented in which nodes are folded into multiple rows in the display area in order to fit the entire tree into the horizontal width of the overview window.

It would have been obvious to one of ordinary skill in the art, having the teachings of Sarkar and Schuur before him at the time the invention was made, to modify the tree structure of Sarkar such that it is sized to fit within a single display area, as is done by Schuur. In other words, it would have been obvious to modify the tree of Sarkar such that there exist a determination as to whether the tree structure horizontally fits into the display area because certain levels are too wide, and also, causing sibling nodes at these wide levels to be folded into multiple rows in the display area, as is done by Schuur. It would have been advantageous to one of ordinary skill to utilize such a combination because, as shown by Schuur, this allows the entire tree to be more efficiently displayed within the display area.

Claims 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over the teachings of Sarkar, which are described above, and also over the article entitled "Latour – A Tree Visualization System," which is attributed to Herman et al. (and hereafter referred to as "Herman"). Regarding claim 8, Sarkar presents a method like that of claim 1, and particularly teaches determining if a graph of linked nodes will not fit vertically into the display area of a computer screen, and identifying and performing any node compression necessary for displaying

the linked nodes within the display area, as is described above. Sarkar, however, does not explicitly teach identifying subtrees in the layout causing the layout not to fit in the display area, and causing the subtrees to be displaying in a manner proportionate to the size of the subtree, as is recited in claim 8.

Complementing the teachings of Sarkar, Herman presents "Latour," which is a computer-implemented system for visualizing hierarchically-organized data, particularly as a tree comprising a plurality of nodes and links (see sections 1 and 2 of Herman). Regarding the claimed invention, Herman discloses that various subtrees in this tree may be encapsulated in triangular shapes, whose size and geometry is proportional to the size of the subtree (see section 3.2).

Therefore, it would have been obvious to one of ordinary skill in the art, having the teachings of Sarkar and Herman before him at the time the invention was made, to modify the graph of Sarkar, such that subtrees that cause the graph layout not to fit within a computer screen display area are each displayed as triangular shapes in a manner proportionate to the size of the subtree, as is done by Herman. It would have been advantageous to one of ordinary skill to utilize this combination because, as shown by Herman, such triangular shapes provide a better overall view of the tree, particularly for trees comprising a large amount of nodes.

Concerning claim 9, Sarkar presents a method for displaying a tree, wherein as described above, the tree is sized to fit within a given display area. Thus it is interpreted that if the tree is found to be too small for the display area, i.e. there is unused display area, the nodes and spaces between the nodes are increased in size such that the tree fits the display area. As shown above, the size of the nodes is associated with a degree of interest value generated for the node.

Moreover, Herman discloses that only the most interesting nodes may be displayed in the tree, the rest of the nodes being encapsulated in triangular shapes whose size and geometry is proportional to the portion of the tree in which the shape represents (see section 3.2). It is therefore interpreted that the method disclosed by Sarkar and Herman, and described above, may include the steps of determining whether there is unused display area for the tree, identifying the most interesting nodes for utilizing the unused display area, and generating new degree of interest values, i.e. sizes, for these most interesting nodes and linked decedents.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over the teachings of Sarkar, which are described above, and also over U.S. Patent No. 6,486,898, which is attributed to Martino et al. (and hereafter referred to as "Martino"). As described above, Sarkar presents a method like that of claim 10, which entails displaying a plurality of linked nodes, each associated with a first set of displayed information. Sarkar, however, does not explicitly teach detecting that a user has requested that a second set of data items associated with the nodes be displayed, and displaying the second set of data items associated with the nodes, as is recited in claim 11.

Like Sarkar, Martino presents a method for displaying linked nodes which may each be associated with a first set of information items (see column 8, lines 22-50 of Martino). For example, Martino discloses that the nodes in the tree may each display an icon, which is understood to denote information. The user may select such an icon, whereby in response to this selection, more detailed information is provided (see column 8, lines 37-40). Thus Martino is considered to teach detecting whether a user has requested that a second set of data items

associated with the nodes be displayed, whereby in response to detecting such request, the second set of data items is displayed.

Therefore, it would have been obvious to one of ordinary skill in the art, having the teachings of Sarkar and Martino before him at the time the invention was made, to modify the graph of Sarkar, such that each node displays an icon which may be selected to display a second set of data items associated with the node, as is done by Martino. It would have been advantageous to one of ordinary skill to utilize this combination because, as demonstrated by Martino, such icons allow more information to be associated with each node, without increasing the amount of display space required to display such information.

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Sarkar and Martino described above, and also over U.S. Patent No. 5,452,414, which is attributed to Rosendahl et al. (and hereafter referred to as "Rosendahl"). As shown above, the combination of Sarkar and Martino presents a method, like that of claim 11, wherein a first set of data items associated with the nodes in a tree structure is displayed, and wherein the user may request that a second set of data items associated with the node be displayed. The combination, however, does not explicitly teach that the nodes are displayed to appear as three-dimensional objects having a plurality of display surfaces and wherein the second set of data items associated with a node is displayed by animating movement of the node to display a second surface of the node having the second set of data items.

Complementing the teachings of Sarkar and Martino, Rosendahl discusses objects, specifically icons, which are utilized to present information to the user (see column 1, lines 10-

54). Rosendahl particularly discloses that such icons may appear as three-dimensional objects having a plurality of display surfaces, each associated with a set of data items, and whereby the icons may appear to rotate in order to display a second set of data items (for example, see column 1, line 55 – column 2, line 9).

Therefore, it would have been obvious to one of ordinary skill in the art, having the teachings of Sarkar, Martino, and Rosendahl before him at the time the invention was made, to modify the nodes of Sarkar and Martino, such that they appear like the icons of Rosendahl, which may rotate to display multiple faces, each associated with a set of data items. It would have been advantageous to one of ordinary skill to utilize this combination because, as demonstrated by Rosendahl, such icons allow more information to be displayed via a single graphical user interface object.

Allowable Subject Matter

Claims 3-4 and 25-27 are allowed. Each of these claims is considered allowable for the reasons described in the previous Office Action, mailed 2/13/2004.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Blaine Basom whose telephone number is (571) 272-4044. The examiner can normally be reached on Monday through Friday, from 8:30 am to 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Cabeca can be reached on (571) 272-4048. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

btb

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